REMARKS

Claims 19 and 21-23 are amended herein. No new matter is presented in any of the foregoing and, accordingly, approval and entry of the amended claims are respectfully requested.

Claims 1-28 are pending and under consideration.

The Examiner rejects claims 1-28 under 35 U.S.C. §102(b) as being anticipated by Cohen et al. (U.S.P. 5,672,948) and rejects claims 1-28 under 35 U.S.C. §102(e) as being anticipated by Liu et al. (U.S.P. 6,850,022).

The rejections are traversed.

Applicant submits that neither Cohen nor Liu support an anticipatory-type rejection by not discussing features recited in the present application's independent claims as a whole.

As provided in MPEP §706.02 entitled Rejection on Prior Art, anticipation requires that the reference must discuss every aspect of a claimed invention.

The present invention relates to an apparatus for determining a phase communication point-of-time based on an elapsed time from after a driving voltages has been turned off through rising edge of the counter-electromotive voltage (see, for example, FIG. 4).

Cohen et al., however, relates to adjusting a frequency of initiatiaon of a commutation based on a neutral or zero crossing of a waveform occuring in state A or D, see for example FIGs. 3A-3C.

Independent claim 1 recites an apparatus including "a controller determining an elapsed time required to detect a counter-electromotive voltage through the counter-electromotive voltage detector after the driving voltage is turned off, to determine a phase commutation point of time based on the determined elapsed time, and controlling the driver to perform phase commutation at the determined phase commutation point of time." (Emphasis added).

Independent claims 7, 13, and 19 (as amended), using claim 7 as an example, recite a method "determining a phase commutation point of time depending on the determined elapsed time."

Independent claims 10 and 16 recite a method, using claim 10 as an example "determining whether the counter-electromotive voltage reaches a preset point; and determining a time earlier than the reference point of time by a reduced amount of a delay time corresponding to the determined elapsed time, upon the counter-electromotive voltage reaching

the preset point, as a phase commutation point of time."

Independent claim 19, as amended, recites a method "upon detection of a rising edge of a counter-electromotive voltage, determining the elapsed time after the detecting the falling edge of the terminal voltage; and performing phase commutation depending on the determined elapsed time."

Independent claim 24 recites an apparatus "determining an elapsed time required to detect a first voltage after a second voltage is turned off, to determine a phase commutation point of time based on the determined elapsed time, and controlling the driver to perform phase commutation at the determined phase commutation point of time."

As provided in MPEP §706.02 entitled Rejection on Prior Art, anticipation requires that the reference must teach every aspect of a claimed invention.

None of the art relied on by the Examiner supports an anticipatory-type rejection by not describing features recited in the present application's independent claims.

For example, neither Cohen nor Liu discuss performing phase commutation at a point of time depending on the determined elapsed time. Cohen merely discusses (see, for example col. 3, lines 10- to col. 4, line 6)

> ascertaining the final count in order to adjust the frequency of initiation of the commutation states when a non-zero count is ascertained for synchronizing the field coil and the rotor . . . decreasing the initiation frequency of the commutation states when a positive final count is ascertained indicating a leading field coil voltage . . . adjusting the initiation frequency of the commutation states when a non-zero count is ascertained for synchronizing the field coil and the rotor. . . (and) increasing the initiation frequency of the commutation states when a negative final count is ascertained.

That is, Cohen merely discusses adjusting a commutation frequency of initiation.

Liu merely teaches that (col. 3, lines 59-65 and in col. 4, lines 37-41) detecting a time difference is used to determine "a commutation position." (Emphasis added).

Further, neither Cohen nor Liu discuss a "preset point" as recited by independent claims 10 and 18. The Examiner contends that this is discussed by Cohen "comparator 66 positive and negative inputs are connected to the coils (14,16,18) (Action at page 3), but provides no further citation.

Applicant submits that such the comparator 66 does not discuss the "preset point."

The Examiner contends that Liu discusses in col 3, lines 56-65 "the time difference to determine the commutation position as recited in the claims." (Action at page 4).

Applicant submits that the "preset point" is not discussed in the lines cited by the Examiner in Liu, or anywhere else.

Further, dependent claims recite features not discussed by either Cohen or Liu. For example, dependent claims 3 teaches "the preset time is proportional to the determined elapsed time."

In rejecting claim 3, the Examiner contends that in Cohen it is "inherent the preset time is proportional to the determined elapsed time." The Examiner contends that since Liu determines "the time delay of the commutation position d/dt, it is inherent to use proportional-integral function to perform the delay commutation." (Action at pages 3 and 4).

Applicant submits that the Examiner's contentions are without support and request the Examiner support the contentions or withdraw the rejections.

As another example, dependent claim 21 recites a method wherein "upon determining that the compared determined elapsed time is less than the minimum detection time, setting the point of time for phase commutation as the time corresponding to a electrical angle of 30° elapsing after a zero-crossing point is detected, detecting a zero-crossing point, determining that the time corresponding to the electrical angle of 30° has elapsed, outputting a phase commutation signal, and applying a driving voltage to a next phase."

In support of the rejection the Examiner merely contends that Cohen shows in "figs 1-3c that the coils are 120 degrees out of phase" and that Liu discusses in "fig 2 that the commutation position is about 30 degrees."

Applicant submits that neither Cohen FIGs. 1-3c nor Liu FIG. 2 or anywhere else in the references discuss the recited features of claim 21.

Summary

Since features recited by claims 1-28 are not discussed by the art relied on by the Examiner, the rejections should be withdrawn and claims 1-28 allowed.

CONCLUSION

There being no further outstanding objections or rejections, it is submitted that the application is in condition for allowance. An early action to that effect is courteously solicited.

Finally, if there are any formal matters remaining after this response, the Examiner is requested to telephone the undersigned to attend to these matters.

If there are any additional fees associated with filing of this Amendment, please charge

the same to our Deposit Account No. 19-3935.

Respectfully submitted,

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